REMARKS

Claims 26-43, 46-55, and 97-100 are pending in the application, with no claims being currently amended. In addition, claims 1-25, 44, 45, and 56-96 are cancelled without prejudice, with Applicants reserving the right to pursue such claims in a divisional application.

In this Official Action, Examiner rejects all pending claims under 35 U.S.C. §103(a) as being obvious over the combination of U.S. Patent No. 6,416,869 ("the '869 patent") and Shimakura U.S. Patent No. 6,475,300 ("Shimakura"), as well as over the combination of WO 00/63462 ("the '462 application") and Shimakura and further in combination with both Song U.S. Patent No. 6,361,592 ("Song") and Brown U.S. Patent No. 6,132,808 ("Brown").

With respect to the obviousness rejections, Examiner recognizes that there is no teaching in the '462 application or the '869 patent of drying the silane solution on a metal substrate to form a coating having a thickness in the range from about 0.1 μm to about 1 μm thereon (or from about 0.2 μm to about 0.6 μm). However, to support a non-obviousness rejection, Examiner relies on Shimakura to fill the teaching void of these references. More specifically, Examiner takes the position that Shimakura demonstrates that the coating thickness of an analogous silane solution (i.e., a primer solution), which is applied onto a metal substrate to bond a topcoat, is a result-effective variable, i.e. a variable which achieves a recognized result. In support thereof, Shimakura is asserted to disclose that corrosion resistance is insufficient if the coating thickness is too thin and adhesion properties may be compromised if too thick. *See* col. 6, lines 5-9. To that end, Examiner states that it would have been obvious to one of ordinary skill in the art to provide an optimized coating thickness in the process of the '462 application or the

'869 patent because the teachings of Shimakura demonstrate that the primer thickness is a result-effective variable, ensuring sufficient corrosion resistance and adhesion properties. *See, e.g., In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); and the Official Action, pages 4-5, 10, 13-15. Applicants respectfully disagree and submit that all of the rejections are in error for the reasons that follow.

After close review of Shimakura, it appears that Examiner has failed to fully appreciate the distinct and separate coating layers disclosed therein that are applied onto metal substrates and, as a result, appears to have commingled its teachings. Specifically, Shimakura appears to disclose both a silane solution, which is referred to therein as a "metallic surface-treating agent" (*See, e.g.*, col. 2, lines 39-45), that can be applied to a metal substrate and a separate and distinct primer layer, i.e, "a nonchromate primer layer" (*See, e.g.*, col. 5, line 66 to col. 6, line 4), which may be applied on the silane solution. In other words, the silane solution is not the primer layer, and vice-versa. To that end, the Shimakura method of producing a coated steel material appears to include treating a metallic surface with the silane solution, drying the coating, and either applying a nonchromate primer followed by a top coat, e.g., paint, or applying a functional coating formed for imparting fingerprint resistance or lubricity. *See* col. 5, lines 52-58 and the Examples.

As indicated above, in rejecting the claims, Examiner specifically cites to column 6, lines 5-9 of Shimakura as a clear teaching that the coating thickness of the silane-based treatment is a result effective variable. This citation is improper insofar as it refers to the coating thickness of the primer layer, and not the silane solution. Thus, that citation clearly does not teach

that the coating thickness of the silane-based treatment is a result effective variable. Therefore, Examiner's rejections of the current claims, which are squarely based on that teaching, cannot stand.

Further, Shimakura fails to disclose applying a substantially hydrolyzed amino-silane and a substantially hydrolyzed sulfur-containing silane [underlining for emphasis] to a metal substrate, as required by independent claims 26 and 46. In fact, Shimakura is devoid of such a disclosure wherein the amino-containing and sulfur-containing silanes are substantially hydrolyzed when applied to the metal substrate. In addition, the Shimakura silane solution further fails to disclose Applicant's bis-sulfur silanes [underlining for emphasis], as required by dependent claims 31 and 49. Rather, Shimakura appears to disclose only mono-sulfur silanes, not bis sulfur silanes. Thus, even if Examiner's citation to column 6, lines 5-9 actually applied to the thickness of the silane solution (which is does not), without an analogous silane solution, it simply cannot be obvious to one of ordinary skill in the art to look to that silane solution in an effort to provide an optimized coating thickness in the process of the '462 application or the '869 patent.

Of additional interest, Shimikura also simply fails to provide any discussion of bonding rubber to metal, as is required by independent claims 26 and 46. Rather, Shimakura concerns itself with bonding top coats, i.e. paint (NOT rubber), to metal substrates such as via a nonchromate primer coating (not a silane solution). *See, e.g.,* abstract; col. 2, lines 46-67; col. 5, lines 51-58; col. 6, lines 5-14 and 39-46, and the Examples. In contrast, Applicants' method specifically requires bonding rubber to metal. Again, Shimakura discloses only the bonding of non-rubbers (e.g., paints) to metal substrates, not rubber to metal. Since Shimakura teaches non-

rubber to metal bonding, what motivation or suggestion is there to combine the teachings of this reference with the rubber bonding of the '462 application or the '869 patent to provide Applicants' claimed methods of bonding rubber to metal? There is none. Thus, the rejections of the claims as obvious are in error and should be withdrawn.

Finally, since Shimakura fails to provide the requisite teachings to maintain Examiner's 103 obviousness rejections, the additional rejections based further on the combination of Song and Brown must also fall. Regardless, Applicants submit that neither Song nor Brown disclose a silane solution that includes an amino containing silane and a sulfur containing silane, as required by Applicants' claimed methods. Accordingly, without the inclusion of a sulfur containing silane in Song and Bond, such sulfur containing silane assisting in the bonding of rubber to the metal substrate, there can be no motivation for the combination.

In view of the foregoing, it is respectfully submitted that the rejections of the claims as obvious is in error and should be withdrawn.

Conclusion

As a result of the remarks given herein, Applicants submit that the rejections of the pending claims have been overcome. Therefore, Applicant respectfully submits that this case is in condition for allowance and requests allowance of the pending claims.

If this Response leaves any issues open or the Examiner wishes to discuss any further issues, a call to undersigned counsel would be gratefully appreciated. Applicants also have submitted all fees believed to be necessary herewith. Should any additional fees or surcharges be

deemed necessary, the Examiner has authorization to charge fees or credit any overpayment to Deposit Account No. 23-3000.

Respectfully submitted,
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